

**OBJECTIVES:** To determine the clinical (compliance, metabolic control, hypoglycaemia and cardiovascular events [CVE]) and economic (resources and costs) impact of metformin in combination with dipeptidyl peptidase-4 inhibitors (DPP4-I) or sulfonylureas in patients with type 2 diabetes. **METHODS:** Design: Multicentre, observational retrospective study. Patients aged  $\geq 30$  years under treatment with metformin who initiated a second oral antidiabetic treatment in 2008–2009 were evaluated. Two study groups were established: a) metformin + DPP4-I, b) metformin + sulfonylureas. Main measures: comorbidity, metabolic control (HbA1c  $< 7\%$ ), compliance and complications (hypoglycaemia, CVE). Patients were followed for 2 years. The cost model considered direct (primary/specialised care) and indirect (productivity) health care costs. Statistical analysis: logistic regression models and ANCOVA,  $p < 0.05$ . **RESULTS:** We recruited 1,405 patients (men age 67.1 years, 56.2% male) of whom 37% initiated a second treatment with DPP4-I and 63% with sulfonylureas. At 2 years follow-up, patients treated with DPP4-I showed better compliance (70.3% vs 60.6%), better metabolic control (64.3% vs 60.6%), and a lower proportion of hypoglycaemia (13.9% vs 40.4%) ( $p < 0.05$ ). The mean unit costs of the total adjusted costs were € 2,341 vs € 2,512, respectively;  $p = 0.038$ . Rates of CVE and renal failure were 3.7% vs 6.4%;  $p = 0.027$ . Vildagliptin was the most commonly used DPP4-I. **CONCLUSIONS:** Sulfonylureas were the most frequently used drugs for the treatment of diabetes. Patients treated with DPP4-I had better compliance and control of diabetes, with lower rates of hypoglycaemia and CVE, resulting in reduced health care costs.

#### PDB47 PATIENT-LEVEL ESTIMATES OF DIABETIC COMPLICATIONS ON DIRECT MEDICAL COST

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**OBJECTIVES:** To estimate the impact of diabetic complications on immediate and long-term direct medical costs in Hong Kong. **METHODS:** A retrospective cohort study was conducted among 137,634 diabetic subjects from a territory-wide administrative database over six years (2008–2013). The trends of annual direct medical costs were analyzed by three groups: group 1) subjects without complications over study period; group 2) subjects with existing complications at baseline; and group 3) subjects developing new complications during follow-up. We employed panel data regression to investigate the impact of each diabetic complication on direct medical costs in the event year and subsequent years, adjusting for age and Charlson Comorbidity Score. **RESULTS:** We found 10,322 subjects with existing diabetic complications at baseline (January 1<sup>st</sup>, 2009), and 14,349 newly developed diabetic complications over 5 years. The annual direct medical costs increased from \$US4,629 to \$US15,585 in the new complications group, which is substantially higher than the modest rise in the no complication group (from \$US1,157 to \$US1,984). The annual direct medical cost of baseline case was \$US1,062 (62 year-old, no complication, Charlson Comorbidity Score=0). After adjusting for age and comorbidity, compared to the baseline case, the multipliers of annual direct medical costs in the event year were: acute myocardial infarction (AMI) 10.61; other ischemic heart disease (IHD) 3.67; congestive heart failure (CHF) 8.46; stroke 10.17; sight threatening diabetic retinopathy (STDR) 3.41; blindness 2.78; end stage renal disease (ESRD) 12.16; peripheral vascular disease (PVD) 3.00; amputation: 3.48. The multipliers in subsequent years were: AMI 1.45; other IHD 1.32; CHF 1.86; stroke 1.37; STDR 2.16; blind 1.32; ESRD 1.86; PVD 1.42; amputation 1.32. **CONCLUSIONS:** There were wide variations in direct medical cost in event year and subsequent years across different major complications. These data would be useful for economic evaluations of diabetes prevention or treatment programs.

#### PDB48 COST OF DIABETES RELATED CHRONIC COMPLICATION IN SOUTH KOREA 2011

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**OBJECTIVES:** This study aimed to analyze the direct medical cost of diabetes related micro- and macrovascular complications in Korean people with diabetes mellitus. **METHODS:** Using the Health Insurance Review & Assessment Service-National Patients Sample (about 1.3 million patients), which was a stratified sampling from the entire population (about 46 million persons) under the Korean national health security system (2011), estimation of direct medical cost complication for patients who have diabetes related chronic complications were performed. We used the 6th revision of Korean Standard Classification of Diseases (KCD-6) which had been developed with the reference of the 10th version of International Classification (ICD-10). All statistical analyses were performed using the Statistical Analysis System (SAS, version 9.3). **RESULTS:** The mean age of the subjects was 61.4 years, 52.1% were male and 47.9% were female. Of the 91,463 patients with DM, 20,584 patients (22%) had at least one microvascular or macrovascular complication, 70,879 patients (78%) had no complication. The average annual direct medical cost in patients who had no complications was 351,660 won in 2011. The average annual direct medical cost in patients who had microvascular complications such as retinopathy, nephropathy, neuropathy was 506,160 won, 1.4 times higher than without DM complications, who had macrovascular complications such as MI, CVA, ESRD was 1,362,928 won, 3.8 times higher than without DM complications. **CONCLUSIONS:** Diabetic complications have a substantial impact on the direct medical costs of DM patients. As the number of people with diabetes continues to rise, early detection of the disease and implementation of timely and appropriate therapeutic strategies could decrease the burden of diabetes chronic complications and also huge related expenditures.

#### PDB49 MEDICAL EXPENDITURE FOR PEOPLE WITH DIABETES IN URBAN EMPLOYEE BASIC MEDICAL INSURANCE IN FUJIAN

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**OBJECTIVES:** To estimate medical expenditure for people with diabetes covered by Urban Employee Basic Medical Insurance (UEBMI) in Fujian. **METHODS:** Claims data were extracted from UEBMIF database during 2012.1. 1 to 2012.12.31. People with diabetes were identified by keyword – diabetes. To estimate expenditures, we used Sum\_All Medical method. Descriptive analyses were conducted by using EXCEL 2010. **RESULTS:** In 2012, one of the Fujian UEBMI database recorded claims data of 240079 patients, including 5953 with diabetes (2.48%), among which 68.81% were male and 91.03% were age over 50. The number of General Outpatient (GO)/Catastrophic Outpatient (CO)/inpatient with diabetes was 5196/4964/2325. GO/CO with diabetes visited physicians averagely 24.13/46.02 times, almost 60% of the visits happened in tertiary hospitals. People with diabetes each used inpatient services 1.70 times; the mean number of LOS was 16.52 days. Total Direct Medical Expenditure for people with Diabetes (TDMED) was CNY 132 million (16.33% of total direct medical expenditure); out-of-pocket spending accounted for 27.20%. GO/CO/inpatient medical expenditures were CNY 3824.16/7960.88/31365.25 per person and CNY 158.49/172.97/18396.62 per visit. Expenses for medicine was CNY 89 million (67.01% of TDMED), only CNY 17 million (13.03% of TDMED) was spent on anti-glycaemic medicine. 94.56% of people with diabetes took prescribed anti-glycaemic medicine, including OAD (88.34%), insulin (41.21%) and traditional Chinese medicine (23.13%). For CO, 47.26% of the visits were due to diabetes and the medical expenditure accounted for 43.40%. Among hospitalized people with diabetes, only 10.68% of their primary diagnoses were diabetes. Inpatient with diabetes whose primary diagnoses were diabetes consumed less health care resources (average LOS/medical expenditure per person/medical expenditure per visit) than those whose primary diagnoses were diabetic complications or other diseases (15.47 days/CNY 14567.57/CNY 12481.90 vs. 16.65 days/CNY 27666.67/CNY 19161.66). **CONCLUSIONS:** Diabetes, as one of the major chronic diseases, consumed a large amount of medical resources in Fujian. Majority of direct medical expenditure were spent on treating diabetic complications and other diseases.

#### PDB50 INDIRECT COSTS OF DIABETES MELLITUS (DM) FROM THE PERSPECTIVE OF THE SOCIAL INSURANCE INSTITUTION (ZUS) IN POLAND

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**OBJECTIVES:** The aim of this study was to assess the indirect costs associated with types 1 and 2 diabetes mellitus (DM) from the perspective of the Social Insurance Institution (ZUS) in Poland. **METHODS:** The estimates were based on data from the year 2012 concerning absence from work due to the illness (sick leave) the amount of short term disability, the sufferers of which claim rehabilitation benefit, and the amount of permanent (or long term) disability, the sufferers of which claim disability pension. Costs were presented in Polish zloty (PLN). **RESULTS:** Total indirect costs of DM types 1 and type 2 in the year 2012 in Poland were 59 013 912 PLN and 66 597 701 PLN, respectively. The highest component of indirect costs of DM type 1 was sick leave (61%). Long and short term disability costs constitute 28% and 11% of total indirect costs of DM type 1, respectively. A slightly different situation was reported in the case of type 2 diabetes: long term disability costs were only 1% of total indirect costs, and short term disability had a slightly larger part of indirect costs (less than 5%). The highest component of indirect costs of DM type 2 was sick leave (95%). One sick leave of a person with types 1 or 2 diabetes generated a cost of lost productivity equal to 1 771 PLN or 1 585 PLN, respectively. The cost of disability pension per one person was higher than rehabilitation benefit, and equalled 41 398 PLN compared with 17 249 PLN (the average value of one short and long term benefit payment was the same for both types of diabetes). **CONCLUSIONS:** DM in Poland generated high indirect costs. The main component was sick leave; rehabilitation benefit and disability pension generated much lower costs for Social Insurance Institution.

#### PDB51 KEY COST DRIVERS OF TYPE 2 DIABETES MELLITUS: AN INTERNATIONAL LITERATURE REVIEW

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**OBJECTIVES:** Type 2 Diabetes Mellitus (T2DM) is a worldwide prevalent chronic disease, related to high morbidity and mortality, and to significant socioeconomic costs. However, the magnitude of cost varies significantly among empirical studies. The objective of this literature review is to identify the main drivers that influence the costs of T2DM. **METHODS:** We searched relevant databases for studies estimating T2DM costs, published in English and Spanish in the USA and Europe (1995–2014). Search terms included “diabetes”, “costs”, “burden”, and “economic impact”. No exclusion was made based on study design. Cost drivers and differences in methodologies across studies were identified. **RESULTS:** A total of 25 papers were included out of 618 relevant titles identified. Costing methodologies and cost drivers vary significantly causing important variations in results. The main difference in methodology refers to estimating T2DM costs versus the costs of people living with T2DM, which include all direct sanitary costs - whether directly related to T2DM or not- and may increase total costs by up to 74%. Direct sanitary costs range between 40% and 75% of total costs depending partially on whether productivity losses and caregiving are considered. The relative weight of hospitalizations range between 20% and 60% of sanitary costs depending on the categories included. Pharmacologic costs range between 13% and 46%, which include antidiabetic drugs and treatments for complications derived from poor control. Optimal glycemic control reduces costs but is not always considered in the studies. Microvascular and/or macrovascular complications and hypoglycemic events increase total cost per patient. **CONCLUSIONS:** Differences in costing methodology, the type of cost categories included in the analysis and the source of data greatly influence the results of the studies and impede reaching accurate conclusions regarding the cost of T2DM. Designing standardized costing methodology guidelines would help future studies estimate the real burden of T2DM.